



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,309	09/21/2004	Richard T Chou	AD6800USPCT1	6111

7590 03/31/2006

Kevin S Dobson
E I du Pont de Nemours and Company
Legal Patent
Wilmington, DE 19805

EXAMINER

HU, HENRY S

ART UNIT	PAPER NUMBER
----------	--------------

1713

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/501,309

Applicant(s)

CHOU ET AL.

Examiner

Henry S. Hu

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Amendment of February 23, 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. This Office Action is in response to faxed **Amendment** filed on February 23, 2006. With the Applicants' amendment, Claims 1-6 were amended; no claim was cancelled, while new Claims 7-12 were added. To be more specific, **all six independent Claims 1-6 were only amended to remove using sulfonamide as one of the many options for the linking group L.**

The Applicants have also corrected an paragraph beginning on page 8 at line 25 as pointed out by the examiner, the examiner thereby withdraws specification objection and claim objections in the previous Office Action dated November 25, 2005. **Claims 1-12 are now pending** with a total of six independent claims (Claims 1-6). An action follows.

Response to Argument

2. After viewing Applicant's argument filed on February 23, 2006, the Examiner withdraws 102 and 103 rejections as well as ODP rejection due to the fact that all six independent Claims 1-6 has been amended to remove the use of sulfonamide from the linking group L. After further performing a search, new set of 103 rejections are applied as follows:

Claim Rejections - 35 USC § 103

Art Unit: 1713

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. *The limitation of parent Claim 1 in present invention relates to a film comprising a fluorine containing ethylene copolymer (FCEC) obtained by the copolymerization of ethylene with suitable fluorine-containing comonomer compounds, wherein the FCEC comprising from about "0.5-40 wt% of a fluorine-containing comonomer compound" and from about "30-99.5 wt% ethylene", wherein: the fluorine-containing comonomer is a fluorinated acrylate or methacrylate esters of the general formula of Cf-L-O-CO-CR=CH₂, wherein (i) Cf is a fluorinated aliphatic group having at least 4 carbon atoms; (ii) L is a linking group selected from the group consisting of arylene, arylalkylene, sulfonyl, sulfoxy, carboxyamino, carbonyloxy, urethanylene, and combinations thereof; and (iii) R is H or CH₃.*

Art Unit: 1713

Each of other parent Claims 2-6 relates to a fiber, an article, a microporous membrane, a flash spun plexifilamentary product or a melt spun fibrous article, and each comprises ethylene copolymer of Claim 1. See other L limitation on dependent Claims 7-12.

5. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gouarderes et al. (US 5,582,918 or its equivalent FR 2,689,134 A1) in view of Hauptschein et al. (US 3,304,278).

Regarding the ethylene di- or co-polymer limitation in each of all independent Claims 1-6, Gouarderes et al. in US and FR patents have disclosed the preparation of copolymers by the copolymerization of an ethylene-type monomer (which is including ethylene or its equivalent ethylene halide) (column 1, line 34-65; particularly see lines 36-46) with a fluorinated alkyl acrylate monomer (1-20 wt%) having a specific formula of $\text{CH}_2=\text{CR}-\text{COO}-(\text{CH}_2)_2-\text{C}_n\text{F}_{2n+1}$ (abstract, line 1-12; see wt% at column 1, line 66-67). It is noted that the weight ratio for monomers is overlapping with the claimed weight ratio. It is also noted that such a copolymer can be applied to many substrates so as to form a gliding surface (column 1, line 6-8).

6. Although fluorinated alkyl acrylate monomer used by Gouarderes may contain a perfluoroalkyl group which is carrying the claimed total carbon atoms, the Gouarderes reference is still silent about using specific ester monomer from “arylene, arylalkylene, sulfonyl, sulfoxy, carboxyamino, carbonyloxy, urethanylene, and combinations thereof” on the L linking group. Hauptschein has taught that in the course of making copolymers, “carboxyamino (-CON-)

Art Unit: 1713

containing” fluorinated merthacrylate can be copolymerized with various types of ethylene-containing comonomers including vinyl halides and styrenes (column 2, line 19-36; column 11, line 13-65; particularly see line 53 for vinyl halides and line 58 for styrenes). By doing so, such a copolymer can be applied to textiles, paper, and any other fibrous-type substrate for effective surface treatment so as to improve water and oil repellency (column 1, line 25-30).

7. In light of the fact that **di- or co-polymers** produced by both involved references are containing **fundamentally the same or similar ethylene-type and the similar type of ester-type acrylic monomers** (related to the same genus) which can be also with overlapping monomeric weight ratio, it is found that **ethylene is functionally equivalent to vinyl halide** in such a copolymerization with fluorinated ester-type acrylic monomer according to the disclosure of Gouarderes. Therefore, one having ordinary skill in the art would have found it obvious to **modify Gouarderes’s copolymerization process by replacing monomer of $\text{CH}_2=\text{CR}-\text{COO}-(\text{CH}_2)_2-\text{C}_n\text{F}_{2n+1}$ with the “carboxy-amino-containing” fluorinated merthacrylate monomer** as taught by Hauptschein based on functional equivalence and interchangeability. One would expect all the embodiments in the same genus would succeed. One Additional advantage is to obtain the same or similar articles in the form of film, fiber, spun fiber, blend and composite and with improving water and oil repellency.

8. All dependent **Claims 7-12** are rejected with the same rational as discussed above for the rejection of its parent Claims 1-6 since they are related to using **carboxy-amino as L group**.

Art Unit: 1713

9. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimada et al. (US 4,778,866) in view of Hauptschein et al. (US 3,304,278) and Gouarderes et al. (US 5,582,918 or its equivalent FR 2,689,134 A1).

Regarding the ethylene copolymer limitation in each of all independent **Claims 1-6**, **Shimada et al.** have disclosed a process for making film, laminate, blend and composite by using **an ethylene copolymer comprising ethylene and an ester-type acrylic monomer selected from formula (I) or (II)** (abstract, line 1-25; column 2, line 35-59 column 6, line 48-68). The total ester with formula (I) or (II) is present in an amount of range from **0.001 to 10 mole%** (abstract, bottom 6 lines; column 2, line 59-60), **which is overlapping with the claimed weight ratio with 30-99.5 wt% ethylene by conversion.**

10. Although **R² in formula (I) may be perfluoroalkyl group with Carbon atoms at 1-15** (column 2, line 46-47), the Shimada reference is silent about using specific ester monomer from “arylene, arylalkylene, sulfonyl, sulfoxy, carboxyamino, carbonyloxy, urethanylene, and combinations thereof” on the L linking group.

First, **Hauptschein** has taught that in the course of making copolymers from “carboxyamino (-CON-) containing” fluorinated merthacrylate with various types of ethylene-containing comonomers including **vinyl halides and styrenes** (column 2, line 19-36; column 11, line 13-65; particularly see line 53 for vinyl halides and line 58 for styrenes). By

Art Unit: 1713

doing so, it can be applied to textiles, paper, and any other fibrous-type substrate for effective surface treatment so as to improve water and oil repellency (column 1, line 25-30).

On the other hand, **Gouarderes** et al. in US and FR patents have disclosed the preparation of copolymers from copolymerization of an ethylene-type monomer including ethylene or its equivalent ethylene halide (column 1, line 34-65; particularly see lines 36-46) with a fluorinated alkyl acrylate monomer (1-20 wt%) having a specific formula of $\text{CH}_2=\text{CR}-\text{COO}-(\text{CH}_2)_2-\text{C}_n\text{F}_{2n+1}$ (abstract, line 1-12; see wt% at column 1, line 66-67).

11. In light of the fact that dipolymers produced by all involved references are containing **fundamentally the same or similar ethylene-type and the similar type of ester-type acrylic monomers** (related to the same genus) which can be with overlapping monomeric weight ratio, it is found that ethylene is functionally equivalent to vinyl halide in such a copolymerization with fluorinated ester-type acrylic monomer according to the disclosure of Gouarderes. Therefore, one having ordinary skill in the art would have found it obvious to **modify Shimada's copolymerization process by replacing fluorinated ester-type acrylic monomer with the "carboxy-amino-containing" fluorinated methacrylate monomer** as taught by the combination of Hauptschein and Gouarderes based on functional equivalence and interchangeability. One would expect all the embodiments in the same genus would succeed. One Additional advantage is to obtain the same or similar articles in the form of film, fiber, spun fiber, blend and composite and with improving water and oil repellency.

Art Unit: 1713

12. All dependent **Claims 7-12** are rejected with the same rational as discussed above for the rejection of its parent Claims 1-6 since they are related to using **carboxyamino as L group**.

Conclusion

13. Applicant's amendment **necessitated the new ground(s) of rejection presented in this Office action**. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a):

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Dr. Henry S. Hu** whose telephone number is **(571) 272-1103**. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM.

Art Unit: 1713

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300 for all regular communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

Patent Examiner, Art Unit 1713, USPTO

March 27, 2006



DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700